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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/827,153 | 04/19/2004 | David Craig Smith | 14374.100 | 2677 |
| 22913 | 7590 | 11/02/2005 | EXAMINER | |
| WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111 | | | THOMAS, COURTNEY D | |
| | | ART UNIT | | PAPER NUMBER |
| | | | | 2882 |
| DATE MAILED: 11/02/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/827,153 | SMITH ET AL. | |
| | Examiner Courtney Thomas | Art Unit 2882 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 19 April 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-39 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-39 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 19 April 2005 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 05/10/05.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 14-16 are objected to because of the following informalities:
2. Claim 14 is dependent on claim 14. By virtue of their dependency on claim 14, dependent claims 15 and 16 are similarly objected to.
3. The claims have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.
4. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 and 34-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones (U.S. Patent 3,555,487).

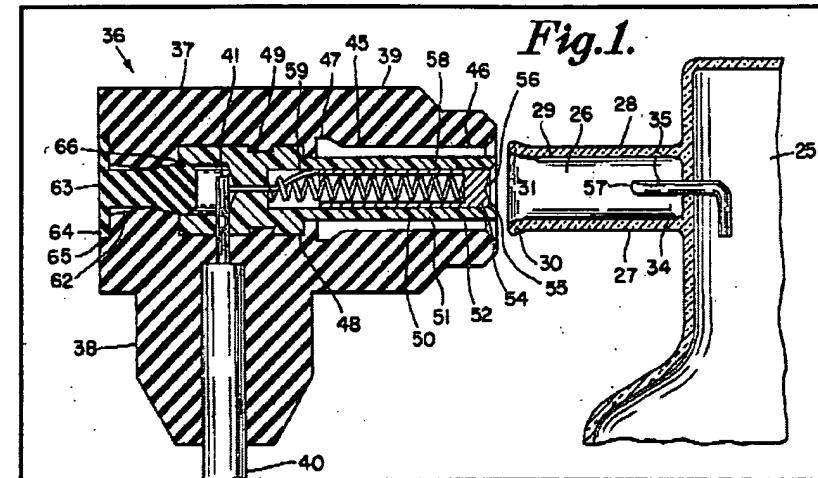


Figure 1 – High Voltage connector – U.S. Patent 3,555,487 to Jones

4. As per claims 1, 34-39, Jones discloses a connector (36) comprising a dielectric material (column 2, lines 29-31), preformed to attach to a corresponding surface of a high voltage device (25), the preformed dielectric material further defining a receptacle cavity (not numbered above) through which an electrode (40), can electrically connect to the high voltage device (25). Examiner recognizes the dielectric material, silicone rubber as a heat dissipative material.

5. As per claims 2-5, Jones discloses a connector further comprising a main cavity (45) defined by the preformed dielectric material, the cavity receiving the corresponding surface of the high voltage device such that the surface is electrically insulated from the electrode (column 2, lines 29-67); wherein the receptacle cavity of the connector is in physical communication with the main cavity (45); and further comprising a bleeding hole extending from an outer surface of the pre-formed dielectric material to the main cavity (see Fig. 1 above); and wherein the dielectric material is composed of a silicone adhesive (column 2, lines 29-31; 52-57).

6. As per claim 6, Jones discloses a conductor, wherein the high voltage device is an X-ray tube (column 2, lines 16-19).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (U.S. Patent 3,555,487) in view of Hansel et al. (U.S. Patent 6,556,654).

9. **As per claims 7, 18 and 28-30,** Jones discloses an X-ray tube (column 2, lines 16-19) and corresponding method of attachment of a high voltage connector (see Jones Figs. 1 (above) & 2 (not shown above)) - comprising an evacuated enclosure (25), a high voltage electrode (40) and a connector (36) configured to electrically connect with the evacuated enclosure (25). Examiner notes that one having ordinary skill in the art would recognize that an X-ray tube comprises a cathode (electron source) for causing electrons to strike the surface of a target (anode), thereby resulting in the generation of X-ray radiation. The absence of X-ray tube elements within the Jones reference is noted as common knowledge within the X-ray art. Jones however, does not explicitly disclose a high voltage electrode configured to connect to a cathode (or anode) portion of the evacuated enclosure or the portion of the evacuated enclosure received by the connector is the portion proximate the cathode (or anode).

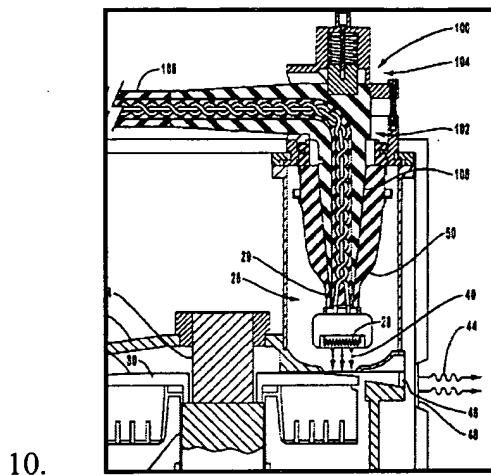


Figure 1 – High voltage connection – U.S. Patent 6,556,654 to Hansel et al.

11. Hansel et al. disclose an X-ray tube comprising a high voltage electrode (102) connected to a cathode portion (28) of the X-ray tube. Hansel et al. teach such construction provides electrical bias by the high voltage cable assembly (102) such that a high voltage potential is established between the cathode and a corresponding anode 24 (not shown above). In this arrangement, the cathode (26) is biased with a high negative voltage while the anode 24 is maintained at or near ground potential. X-ray tubes of this type are commonly referred to as single-ended tubes (column 7, lines 42-52). Examiner notes that the application of high voltage power to either end of a cathode-anode arrangement, wherein one element is at a higher potential results in an electric field created by the voltage differential, which assists in the acceleration of electrons from the cathode to anode. Either arrangement may be employed in single ended tubes, as suggested by Hansel et al. (column 7, lines 42-62).

12. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the X-ray tube of Jones such that it incorporated a high voltage electrode configured to connect to a cathode (or anode) portion of the evacuated enclosure and the portion of the evacuated enclosure received by the connector is the portion proximate the

cathode (or anode). One would have been motivated to make such a modification for the purpose of creating an electrical bias between the cathode and anode so that electrons emitted from the cathode are accelerated to a corresponding surface of a receiving anode to generate X-ray radiation as is currently practiced in the X-ray art and further suggested by Hansel et al. (column 7, lines 42-62).

13. **As per claims 8-11 and 18-22,** Jones as modified above, discloses an X-ray tube wherein the cavity (45) comprises a main cavity portion that receives a specified portion (26) of the evacuated enclosure and a receptacle cavity portion (not numbered) that receives the electrode when the connector is attached to the evacuated enclosure; wherein the receptacle cavity portion is aligned with the cathode receptacle and wherein the electrode is received within the receptacle cavity portion when the electrode is attached to the cathode and wherein the receptacle cavity is integrally formed with the connector (see Jones Fig. 2, not shown above).

14. **As per claims 12-14, 23-25, and 31-33,** Jones as modified above, discloses an X-ray tube wherein the evacuated enclosure comprises first (25) and second segments (26) that are hermetically joined to form the evacuated enclosure; wherein the connector is physically affixed to the evacuated enclosure (Jones Fig. 2, not shown above); wherein a lubricant is used to assist the attachment of the connector to the evacuated enclosure (column 3, lines 14-20).

15. **As per claims 15 and 26,** Jones as modified above does not explicitly disclose an X-ray tube further comprising a second connector configured to enable a second electrode to electrically connect with an anode receptacle.

16. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the X-ray tube of Jones, such that it incorporated a second

connector, electrically connected with an anode receptacle. One would have been motivated to make such a modification for the purpose of ensuring a voltage potential difference between the anode and cathode, whereby acceleration characteristics of electrons can be regulated as suggested by Hansel et al. (column 7, lines 42-62).

17. **As per claims 16 and 17,** Jones as modified above does not explicitly disclose an X-ray tube wherein first and second connectors include an X-ray absorptive component.

18. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the X-ray tube of Jones such that it incorporated X-ray absorptive components in first and second connectors. One would have been motivated to make such a modification for the purpose of limiting X-ray radiation leakage via connection areas of the tube.

19. **As per claim 27,** Jones as modified above, disclose an X-ray tube wherein at least a portion of the high voltage electrode is permanently incorporated within the connector (see Jones Fig. 1, above).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Courtney Thomas
Examiner
Art Unit 2882